

**Express Mail No. EM508444074US**

**Exhibit A**

EXPRESS MAIL NO. EM5084440745

# **McGraw-Hill Dictionary of Scientific and Technical Terms**

## **Fifth Edition**

**Sybil P. Parker**  
Editor in Chief

**McGraw-Hill, Inc.**

Auckland	Bogotá	New York	San Francisco	Washington, D.C.			
Montreal	New Delhi	Caracas	Lisbon	London	Madrid	Mexico City	Milan
		San Juan	Singapore	Sydney	Tokyo	Toronto	

On the cover: Photomicrograph of crystals of vitamin B<sub>12</sub>.  
(Dennis Kunkel, University of Hawaii)

EXPRESS MAIL NO. EM508444074US

Included in this Dictionary are definitions which have been published previously in the following works: P. B. Jordain, *Condensed Computer Encyclopedia*, Copyright © 1969 by McGraw-Hill, Inc. All rights reserved. J. Markus, *Electronics and Nucleonics Dictionary*, 4th ed., Copyright © 1960, 1966, 1978 by McGraw-Hill, Inc. All rights reserved. J. Quick, *Artists' and Illustrators' Encyclopedia*, Copyright © 1969 by McGraw-Hill, Inc. All rights reserved. *Blakiston's Gould Medical Dictionary*, 3d ed., Copyright © 1956, 1972 by McGraw-Hill, Inc. All rights reserved. T. Baumeister and L. S. Marks, eds., *Standard Handbook for Mechanical Engineers*, 7th ed., Copyright © 1958, 1967 by McGraw-Hill, Inc. All rights reserved.

In addition, material has been drawn from the following references: R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *U.S. Air Force Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, 1st ed., National Aeronautics and Space Administration, 1965; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology*, White Sands Missile Range, New Mexico, National Bureau of Standards, AD 467-424; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, 1st ed., Department of Defense, 1967; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; *ADP Glossary*, Department of the Navy, NAVSO P-3097.

## McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, Fifth Edition

Copyright © 1994, 1989, 1984, 1978, 1976, 1974 by McGraw-Hill, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

1 2 3 4 5 6 7 8 9 0    DOW/DOW    9 9 8 7 6 5 4 3

ISBN 0-07-042333-4

### Library of Congress Cataloging-in-Publication Data

McGraw-Hill dictionary of scientific and technical terms /

Sybil P. Parker, editor in chief.—5th ed.

p.      cm.

ISBN 0-07-042333-4

1. Science—Dictionaries.    2. Technology—Dictionaries.

I. Parker, Sybil P.

Q123.M34    1993

503—dc20

93-34772

CIP

### INTERNATIONAL EDITION

Copyright © 1994. Exclusive rights by McGraw-Hill, Inc. for manufacture and export. This book cannot be re-exported from the country to which it is consigned by McGraw-Hill. The International Edition is not available in North America.

When ordering this title, use ISBN 0-07-113584-7.

length of the vessel to pass the object is measured, and the speed can then be computed. { 'däch-mänz 'läg }

**Dutch metal** [MET] An alloy of 80% copper and 20% zinc that is ductile, is easily drawn, and takes a high polish; used for low-priced jewelry. { 'däch-med-əl }

**Dutch process** [CHEM ENG] A process for making white lead; metallic lead is placed in vessels containing a dilute acetic acid, and the vessels are stacked in bark or manure. [FOOD ENG] A chocolate manufacturing process in which cocoa nibs are treated with alkali to neutralize the natural acids present and to enhance color. { 'däch-präs-əs }

**duty classification of a relay** [ELEC] Expression of the frequency with which the relay may be required to operate without exceeding prescribed limitations. { 'düt-ē klas-ə-fə-kā-shən əv ə 'rē-lā }

**duty cycle** [COMMUN] The product of the pulse duration and pulse frequency of a pulse carrier, equal to the time per second that pulse power is applied. Also known as duty factor. [ELECTR] See duty ratio. [ENG] 1. The time intervals devoted to starting, running, stopping, and idling when a device is used for intermittent duty. 2. The ratio of working time to total time for an intermittently operating device, usually expressed as a percent. Also known as duty factor. [MET] The percentage of time that current flows in equipment over a specific period during electric resistance welding. [NUCLEO] The fraction of time during which a pulsed accelerator beam is on target, usually expressed as a percent. Also known as duty factor. { 'düt-ē ,sī-kəl }

**duty cyclometer** [ENG] Test meter which gives direct reading of duty cycle. { 'düt-ē sī'klām-əd-ər }

**duty factor** See duty cycle. { 'düt-ē ,fak-tər }

**duty of water** [HYD] The total volume of irrigation water required to mature a particular type of crop, including consumptive use, evaporation and seepage from ditches and canals, and the water eventually returned to streams by percolation and surface runoff. { 'düt-ē əv 'wöd-ər }

**duty ratio** [ELECTR] In a pulse radar or similar system, the ratio of average to peak pulse power. Also known as duty cycle. { 'düt-ē ,rā-shō }

**DUV** See data under voice.

**duvetyn** [TEXT] A twill fabric with a napped velvety surface which obscures the weave. { 'dū-vət-ən }

**D value** [NAV] The difference between pressure altitude and absolute altitude, as determined at a given time in flight, expressed algebraically; the absolute altitude is always minuend. Also known as D sounding. { 'dē ,val-yü }

**D variometer** See declination variometer. { 'dē ,ver-ē'am-əd-ər }

**Dvorak keyboard** [ENG] A keyboard whose layout is altered from that of the standard qwerty keyboard to speed up typing; more of the frequently used keys are on the home row. { də'vór,ak 'kē,bórd }

**dwarf** [BIOL] Being an atypically small form or variety of something. [MED] An abnormally small individual; especially one whose bodily proportions are altered. { 'dworf }

**dwarf Cepheids** [ASTRON] A class of pulsating variable stars with periods of less than 6 hours and spectral type A or F; similar to  $\delta$  Scuti stars but sometimes distinguished from them by the slightly larger amplitudes of their light curves. Also known as AI Velorum stars. { 'dworf 'sef-ē-ədz }

**dwarf disease** [PL PATH] A virus disease marked by the inhibition of fruit production; common in plum trees. { 'dworf di,zēz }

**dwarf galaxy** [ASTRON] An elliptical galaxy with low mass and low luminosity, having at most a few tens of millions of stars. { 'dworf 'gal-ik-sē }

**dwarfism** [MED] Underdevelopment of the body due to surgical removal of the pituitary gland or hyposecretion of growth hormone. { 'dwór,fiz-əm }

**dwarf mouse unit** [BIOL] A unit for the standardization of somatotropin. { 'dworf 'maüs ,yü-mat }

**dwarf novae** [ASTRON] A class of irregular variable stars which undergo rapid increases in brightness of several magnitudes at semiperiodic intervals, and then decrease more slowly to the normal minimum; they may be divided into U Geminorum stars and Z Camelopardalis stars. { 'dworf 'nō,vī }

**dwarf spheroidal galaxy** [ASTRON] One of the smallest and faintest of the dwarf galaxies, with an effective radius of 200-

1000 parsecs and an absolute visual magnitude between -13. { 'dworf sfir'oid-əl 'gal-ik-sē }

**dwarf star** [ASTRON] A star that typically has surface temperature of 5730 K, radius of 428,000 miles (690,000 km), mass of  $2 \times 10^{33}$  grams, and luminosity of  $4 \times 10^3$  second. Also known as main sequence star. { 'dworf ,stär }

**dwell** [DES ENG] That part of a cam that allows follower to remain at maximum lift for a period [ELEC] The number of degrees through which the cam rotates from the time that the contact points close to the time that they open again. Also known as dwell angle. A pause in the application of pressure to a mold. { 'dwell ,an-ǵəl }

**dwell angle** See dwell. { 'dwell ,an-ǵəl }

**dwey** See dwigh. { 'dwā }

**dwigh** [METEOROL] In Newfoundland, a sudden snow storm. Also known as dwey; dwoy. { 'dwī }

**Dwight-Lloyd machine** [MIN ENG] A continuous machine in which the feed is moved on articulated pl. by chains in conveyor-belt fashion. { 'dwīt 'lōid m: }

**Dwight-Lloyd process** [MIN ENG] Blast roasting, currents being drawn downward through the ore. { 'dwīt ,präs-əs }

**DWL** See design waterline.

**dwoy** See dwigh. { 'dwōi }

**dwt** See deadweight tonnage; pennyweight.

**Dwyka tillite** [GEOL] A glacial Permian deposit that spread in South Africa. { dā'vik-ə 'ti,līt }

**DX** See distance reception.

**DX coil** See direct-expansion coil. { 'dē'eks ,kōil }

**Dy** See dysprosium.

**dyad** [CYTOL] Either of the two pair of chromatic by separation of a tetrad during the first meiotic division. [MATH] An abstract object which is a pair of vectors given in order on which certain operations are defined.

**dyadic expansion** [MATH] The representation of a number in the binary number system. { dī'ad-ik ik'span-čh }

**dyadic operation** [MATH] An operation that has two operands. { dī'ad-ik ,əp-ə'rā-shən }

**dyadic processor** [COMPUT SCI] A type of multiprocessor that includes two processors which operate under control of the same copy of the operating system. { dī'ad-ik 'präs-əs-ər }

**dyadic rational** [MATH] A fraction whose denominator is a power of 2. { dī'ad-ik 'rash-ən-əl }

**dye** [CHEM] A colored substance which imparts a permanent color to other materials. Also known as dyestuff. { 'dī }

**dyecrete process** [ENG] A process of adding color to concrete with organic dyes. { 'dī,kreī ,präs-əs }

**dyeing** [CHEM ENG] The application of colorants to material, usually fibrous or film, in order to impart a degree of color permanence demanded by the project. { 'dī-ŋ }

**dyeing assistant** [CHEM] Material such as sodium sulfite added to a dye bath to control or promote the action of the dye. { 'dī-ŋ əs,sist-ənt }

**dye laser** [OPTICS] A type of tunable laser in which the active medium is a dye such as acridine red or esculin; the excitation of dye molecules, and laser action takes place between the excited and ground electronic states, each of which comprises a vibrational-rotational continuum. { 'dī ,lā-zər }

**dye penetrant** [MET] A dye-containing liquid used for detecting cracks or other surface defects in nonmagnetic materials. { 'dī ,pen-ə-trənt }

**dye polymer recording** [COMPUT SCI] An optical technique in which dyed plastic layers are used as the recording medium. { 'dī ,pāl-ə-mər ri'kórd-ŋ }

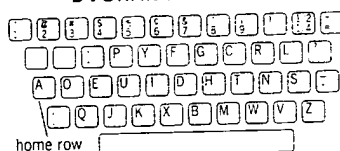
**dye-retarding agent** [MATER] Materials that delay the rate of dye absorption, preventing rapid exhaustion of the dye. { 'dī ri,tārd-ŋ ,ā-jənt }

**dyestuff** See dye. { 'dī ,staf }

**dye toning** [GRAPHICS] The process whereby the color of a developing image is altered by changing the color of the dye solution and then placing the film in a suitable dye solution. { 'dī ,tōn-ŋ }

**dynamic address translator** [COMPUT SCI] A device used in a virtual memory system to automatically translate a virtual address inquiry in terms of segment number within the segment, and position of the

#### DVORAK KEYBOARD



Layout of the Dvorak keyboard.  
(After A. Freedman, *The Computer Glossary*, 4th ed., 1989)